



and teacher: Use this cover sheet for mailing or faxing.

# **ASSIGNMENT BOOKLET**

SCN2231 Biology 30

Module 4 Assignment

## **FOR STUDENT USE ONLY**

Date Assignment Submitted:

(If label is missing or incorrect)

Student File Number:

Time Spent on Assignment:

Module Number: \_\_\_\_\_

## **FOR OFFICE USE ONLY**

Assigned

Teacher: \_\_\_\_\_

Assignment

Grading: \_\_\_\_\_

Graded by: \_\_\_\_\_

Date Assignment Received:

## **Student's Questions and Comments**

Apply Module Label Here

Name

Address

Postal Code

Please verify that preprinted label is for  
correct course and module.

## **Teacher's Comments**

Teacher



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- Are all the assignments completed? If not, explain why.
- Has your work been reread to ensure accuracy in spelling and details?
- Is the booklet cover filled out and the correct module label attached?

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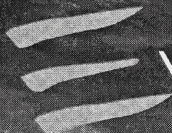
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# Biology 30

Learn



veryWare



**we** engage

From Fertilization to Birth

## Module 4

Assignment Booklet



EDMONTON PUBLIC SCHOOLS



**Alberta**  
Education



## FOR TEACHER'S USE ONLY

### Summary

|                     | Total Possible Marks | Your Mark |
|---------------------|----------------------|-----------|
| Lesson 1 Assignment | 64                   |           |
| Lesson 2 Assignment | 10                   |           |
|                     | 74                   |           |

### Teacher's Comments

Biology 30 Learn EveryWare  
Module 4: From Fertilization to Birth  
Assignment Booklet  
ISBN 978-0-7741-3191-9

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This document is intended for

|                  |   |
|------------------|---|
| Students         | ✓ |
| Teachers         | ✓ |
| Administrators   |   |
| Home Instructors |   |
| General Public   |   |
| Other            |   |



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- Alberta Education, <http://www.education.gov.ab.ca>
- Learning Resources Centre, <http://www.lrc.education.gov.ab.ca>
- Tools4Teachers, <http://www.tools4teachers.ca>

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## **MODULE 4: LESSON 1 ASSIGNMENT**

This Module 4: Lesson 1 Assignment is worth 64 marks.

The value of each assignment and each question is stated in the left margin.

**(31 marks) Lesson 1 Assignment: Fertilization and Embryonic Development**

**Lab: Comparing Embryonic Structures**

**Problem (Purpose)**

How do embryonic structures of humans and other animals compare?

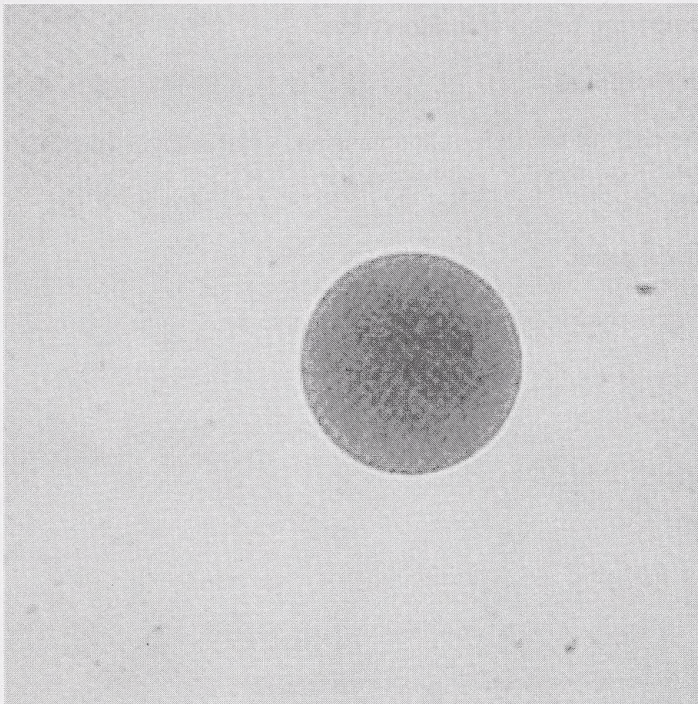
**Materials**

- blank paper
- pencil
- microscopy images of stages of embryo development (provided)



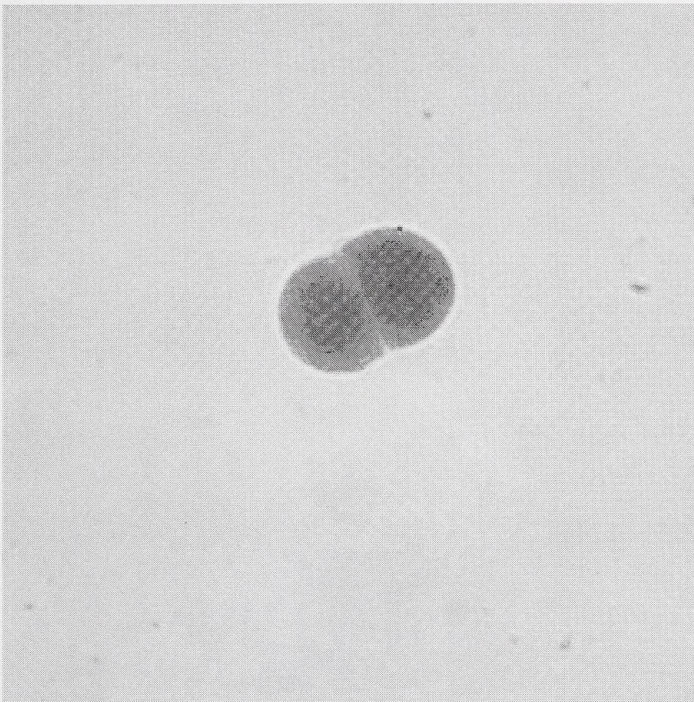
**(5 marks) Procedure****Part 1: Observing Embryonic Structures**

1. View the microscopy images of the different stages of embryonic development. Be aware of the magnification power given and the name of the development stage.

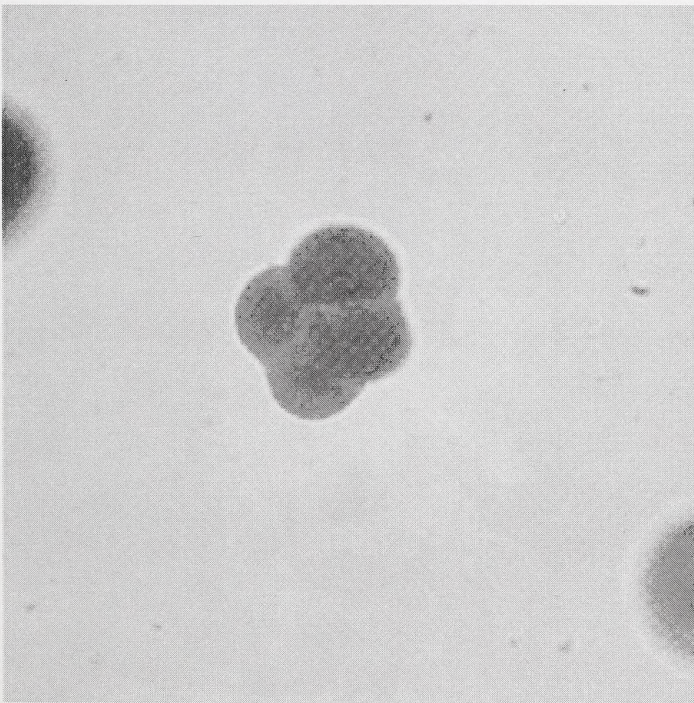


Microscopy: Arbacia, zygote, 200X



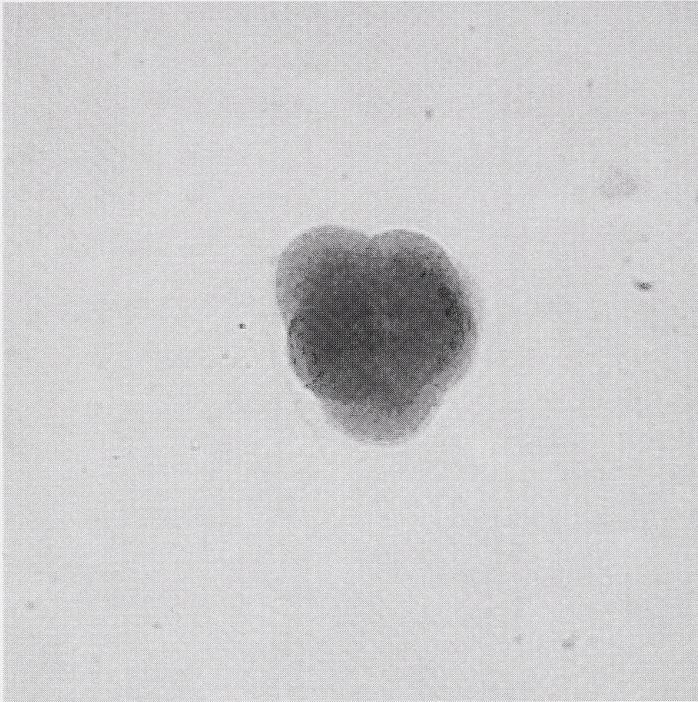


Microscopy: Arbacia, cleavage, two-cell stage, 400X

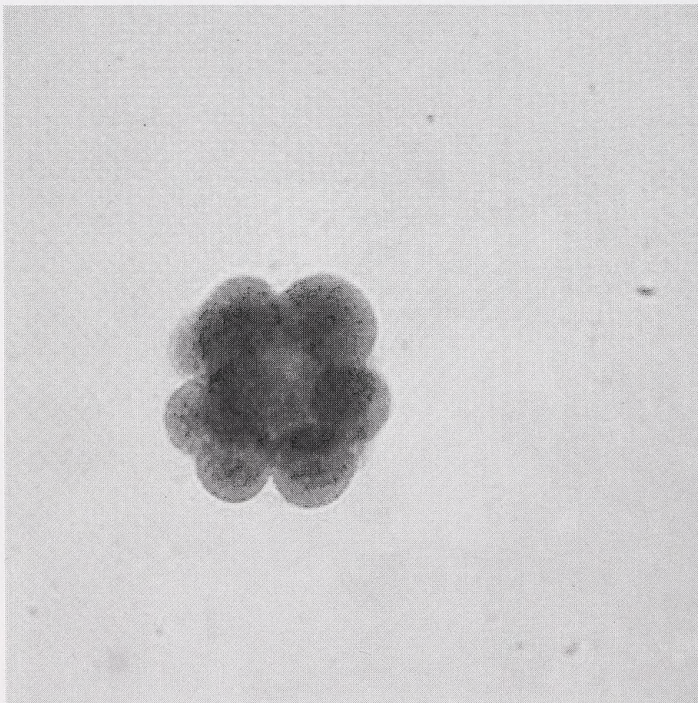


Microscopy: Arbacia, cleavage, four-cell stage, 400X



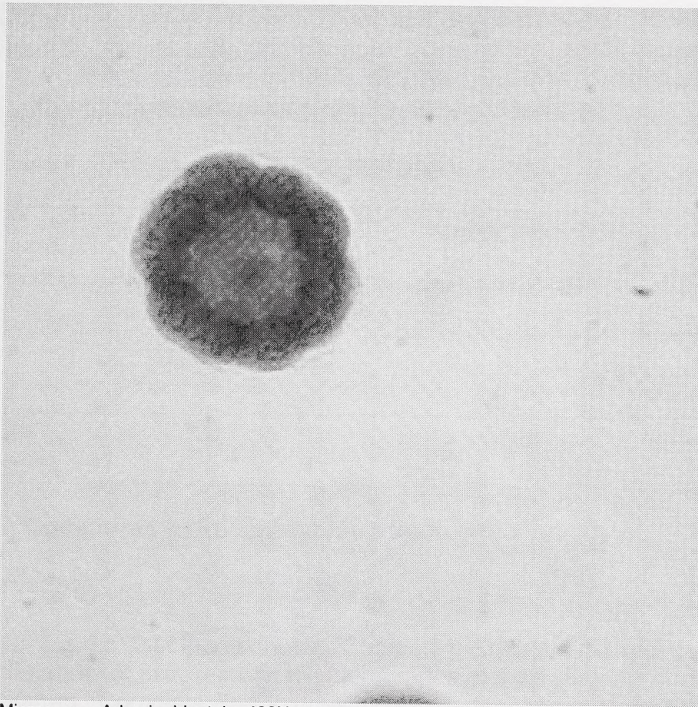


Microscopy: Arbacia, cleavage, eight-cell stage, 400X

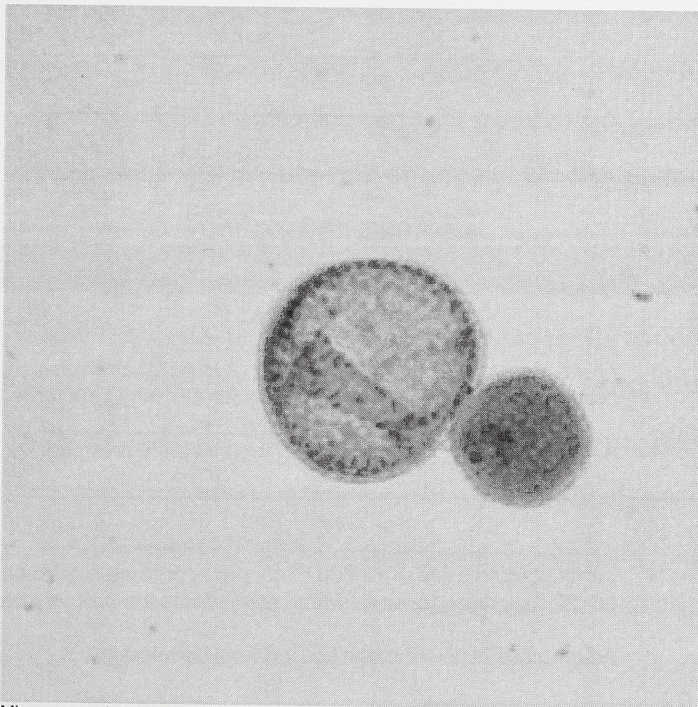


Microscopy: Arbacia, morula, 400X





Microscopy: Arbacia, blastula, 400X



Microscopy: Arbacia, gastrula, 400X



2. Sketch the main features that you observe in the cleavage at the four-cell stage, the blastula stage, and gastrula stage. Add labels to identify all the features that you recognize. You may create your sketch by hand or digitally. Ask your teacher how to submit your sketch if you are not able to include it in the space provided.

The following rubric will help you develop your work for assessment:

#### SCORING RUBRIC

| Score                   | Scoring Criteria                                                                                                                                                                                                                                                                                    |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>5<br/>Excellent</b>  | <p>Part 1</p> <ul style="list-style-type: none"><li>• Three diagrams are drawn on paper or in a digital illustration, following proper biological drawing format, with labels for as many structures as possible.</li><li>• A figure title, with magnification of the image, is provided.</li></ul> |
| <b>4<br/>Proficient</b> | <p>Part 1</p> <ul style="list-style-type: none"><li>• Three diagrams are drawn on blank paper or done electronically, following proper biological drawing format; some items are properly labelled.</li><li>• A figure title is given; magnification may be missing.</li></ul>                      |



|                                                                     |                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p style="text-align: center;"><b>3</b><br/><b>Satisfactory</b></p> | <p style="text-align: center;">Part 1</p> <ul style="list-style-type: none"> <li>Two diagrams are drawn on blank paper OR done electronically, following proper biological drawing format; some items are properly labelled.</li> <li>A figure title, with no magnification, is given.</li> </ul> |
| <p style="text-align: center;"><b>2</b><br/><b>Limited</b></p>      | <p style="text-align: center;">Part 1</p> <ul style="list-style-type: none"> <li>Only half or fewer of the diagrams required were drawn; proper biological drawing format not followed.</li> <li>No labels are given for any structures, or wrong labels are given.</li> </ul>                    |
| <p style="text-align: center;"><b>1</b><br/><b>Poor</b></p>         | <ul style="list-style-type: none"> <li>Only one of the bullets is addressed at a 2 or 3 level.</li> </ul>                                                                                                                                                                                         |

**(26 marks) Part 2: Comparing Extra-embryonic Structures**

**(4 marks) Observations**

- (4 marks)** 1. On page 519 of the textbook, "Comparing Embryonic Structures," examine the diagrams of extra-embryonic membranes of an embryonic chick and an embryonic human. Complete Part 2: questions 2, parts a and b. Make notes on which extra-embryonic membranes the human and the chicken embryos have in common.

a. \_\_\_\_\_

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b. \_\_\_\_\_

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**(22 marks)    Analysis**

**(1 mark)**        1.    Complete “Analysis” question 1 on page 519 of the textbook.

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**(2 marks)**        2.    Complete “Analysis” question 2 on page 519 of the textbook.

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**(1 mark)**        3.    Complete “Analysis” question 3 on page 519 of the textbook.

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**(2 marks)**        4.    Complete “Analysis” question 4 on page 519 of the textbook.

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- (8 marks)** 5. Complete “Analysis” question 5 on page 519 of the textbook.

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6. Complete “Analysis” question 6 on page 519 of the textbook.

**(2 marks)**

a. 

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**(6 marks)**

b. 

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**(33 marks)**

### REFLECT AND CONNECT

- (19 marks)** 1. Complete the “Procedure” and “Analysis” questions of the “Launch Lab” on page 507 of the textbook.

**(2 marks)**

“Procedure” question 1: 

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(1 mark)            “Analysis” question 1: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(2 marks)           “Analysis” question 2: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(4 marks)           “Analysis” question 3: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(6 marks)           “Analysis” question 4: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(2 marks)           “Analysis” question 5. a.: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(2 marks)           “Analysis” question 5. b.: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



2. Complete "Applying Concepts" questions 18, 20, 21, and 23 on page 536 of the textbook.

**(2 marks)**

Question 18: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**(2 marks)**

Question 20: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**(2 marks)**

Question 21: \_\_\_\_\_  
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\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**(2 marks)**

Question 23: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
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\_\_\_\_\_

3. Complete “Making Connections” questions 24, 25, and 26 on pages 536 and 537 of the textbook.

(2 marks)

Question 24: \_\_\_\_\_

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(2 marks)

Question 25: \_\_\_\_\_

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(2 marks)

Question 26: \_\_\_\_\_

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## MODULE 4: LESSON 2 ASSIGNMENT

This Module 4: Lesson 2 Assignment is worth 10 marks. The value of each assignment and each question is stated in the left margin.

(10 marks)

### LESSON 2 ASSIGNMENT: GENETIC, HORMONAL & ENVIRONMENTAL EFFECTS ON EMBRYONIC AND FETAL DEVELOPMENT

(10 marks)

- Complete the table below by researching factors that affect embryonic and fetal development. Examine the examples given for each Affecting Factor then complete the one other factor given and provide one factor of your own choice. For each Affecting Factor, describe how it will affect embryonic tissue development and fetal development.

**TABLE 1: GENETIC, HORMONAL & ENVIRONMENTAL EFFECTS ON EMBRYONIC AND FETAL DEVELOPMENT**

| Affecting Factors                         | Embryonic Tissue Development – 1st trimester (0 to 12 weeks)                    |          |          | Effects on Fetal Development                      |                                    |
|-------------------------------------------|---------------------------------------------------------------------------------|----------|----------|---------------------------------------------------|------------------------------------|
|                                           | Ectoderm                                                                        | Mesoderm | Endoderm | 2nd Trimester (12 to 24 weeks)                    | 3rd Trimester (24 to 36 weeks)     |
| <b>Genetic:</b><br>e.g., Colour Blindness | Eyes form, but eyelids are fused shut. Cone development would be affected here. |          |          | Eyes are well developed but are still fused shut. | Eyes are open, and eyelashes form. |
| x-rays                                    |                                                                                 |          |          |                                                   |                                    |
|                                           |                                                                                 |          |          |                                                   |                                    |

|                                                                      |                                                                                                                                                                                                                                                                                      |  |  |  |                                           |
|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|-------------------------------------------|
| <b>Hormonal:</b><br>e.g., Combined maternal and fetal hypothyroidism | Neurological abnormalities resulting from effects of the ectoderm tissue are: hearing and speech defects (often resulting in deaf-mutism), mental deficiency (intellectual deficits, visual-motor deficits, autism), and motor deficits (limb rigidity, spasticity, muscle wasting). |  |  |  |                                           |
| hyperthyroidism                                                      |                                                                                                                                                                                                                                                                                      |  |  |  |                                           |
| <b>Environmental:</b><br>e.g., alcohol consumption                   | Affects brain, CNS, and facial and head malformations.                                                                                                                                                                                                                               |  |  |  | Decreased mass, height, and size of head. |
| Thalidomide                                                          |                                                                                                                                                                                                                                                                                      |  |  |  |                                           |

**SCORING RUBRIC**

| Score                     | Scoring Criteria for Lab: Comparing Embryonic Structures                                                                                                                                                                                                                                           |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>5<br/>Excellent</b>    | <ul style="list-style-type: none"> <li>states three conditions for each 'affecting factor'; fully describes the results on the appropriate germ layer in embryonic development</li> <li>fully describes the effects on fetal development that each 'affecting factors' causes</li> </ul>           |
| <b>4<br/>Proficient</b>   | <ul style="list-style-type: none"> <li>states three conditions for each 'affecting factor'; mostly describes the results on the appropriate germ layer in embryonic development</li> <li>mostly describes the effects on fetal development that each 'affecting factor' causes</li> </ul>          |
| <b>3<br/>Satisfactory</b> | <ul style="list-style-type: none"> <li>states only two conditions for each 'affecting factor'; mostly describes the results on the appropriate germ layer in embryonic development</li> <li>describes some of the effects on fetal development that each 'affecting factor' causes</li> </ul>      |
| <b>2<br/>Limited</b>      | <ul style="list-style-type: none"> <li>states only one condition for each 'affecting factor'; mostly describes the results on the appropriate germ layer in embryonic development</li> <li>limited description of the effects on fetal development that each 'affecting factors' causes</li> </ul> |
| <b>1<br/>Poor</b>         | <ul style="list-style-type: none"> <li>addresses only one of the bullets at a 2 or 3 level</li> </ul>                                                                                                                                                                                              |





